

In The Claims:

A clean set of claims is presented below, a comparison of such claims with the previous claims as attached.

Please cancel Claim 1.

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~~2. (Amended) A data storage system for transferring data between a host computer/server and a bank of disk drives through a system interface, such system interface comprising:~~

~~a plurality of first directors coupled to the host computer/server;~~

~~a plurality of second directors coupled to the bank of disk drives;~~

~~a cache memory;~~

~~wherein there are separate point-to-point data paths between each one of the directors and the cache memory and~~

~~including a backplane and wherein the cache memory and the directors are interconnected through the backplane.~~

3. The system recited in claim 2 wherein the backplane is a printed circuit board.

4. (Amended) A data storage system for transferring data between a host computer/server and a bank of disk drives through a system interface, such system interface comprising:

a plurality of first directors coupled to the host computer/server;

a plurality of second directors coupled to the bank of disk drives;

a cache memory;

a data transfer section coupled to the plurality of first directors, the second directors, and the cache memory;

a messaging network coupled to the plurality of first directors and the plurality of second directors, such first and second directors controlling data transfer between

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the host computer and the bank of disk drives in response to messages passing between the directors through the messaging network as such data passes through the memory via the data transfer section;

wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

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5. The system recited in claim 4 including a backplane and wherein the cache memory and the directors are interconnected through the backplane.

6. The system recited in claim 5 wherein the backplane is a printed circuit board.

7. (NEW) The system recited in claim 4 wherein the messaging network comprises a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of first and second directors.

8. (NEW) A system interface comprising:

a plurality of first directors;

a plurality of second directors;

a data transfer section having a cache memory, such cache memory being coupled to the plurality of first and second directors;

a messaging network comprising a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of first directors and second directors, such message network being operative independently of the data transfer section;

wherein the first and second directors control data transfer between the first directors and the second directors in response to messages passing between the first directors and the second directors through the messaging network to facilitate data transfer between first directors and the second directors with such data passing through

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the cache memory in the data transfer section; and

wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

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9. (NEW) A system interface comprising:

a plurality of first directors;

a plurality of second directors;

a data transfer section having a cache memory, such cache memory being coupled to the plurality of first and second directors;

a messaging network, operative independently of the data transfer section, coupled to the plurality of first directors and the plurality of second directors;

wherein the first and second directors control data transfer between the first directors and the second directors in response to messages passing between the first directors and the second directors through the messaging network with such messages by-passing the data transfer section and with such data transfer comprising passing data through the directors to the cache memory in the data transfer section; and

wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

10. (NEW) The system interface recited in claim 9 wherein the messaging network comprises a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of first and second directors.

11. (NEW) A system interface comprising:

a plurality of first directors;

a plurality of second directors;

a data transfer section having a cache memory, such cache memory being coupled to the plurality of first and second directors;

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a messaging network coupled to the plurality of first directors and the plurality of second directors;

wherein the first and second directors control data transfer between the first directors and the second directors in response to messages passing between the first directors and the second directors through the messaging network with such messages by-passing the data transfer section and with such data transfer comprising passing data through the directors to the cache memory in the data transfer section; and

wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

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12. (NEW) The system interface recited in claim 11 wherein the messaging network comprises a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of first and second directors.

13. (NEW) A system interface comprising:

a plurality of first directors;


a plurality of second directors;


a data transfer section having a cache memory, such cache memory being coupled to the plurality of first and second directors;

a messaging network comprising a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of first and second directors;

wherein the first and second directors control data transfer between the first directors and the second directors in response to messages passing between the first directors and the second directors through the messaging network with such messages by-passing the data transfer section and with such data transfer comprising passing data through the directors to the cache memory in the data transfer section; and

wherein there are separate point-to-point data paths between each one of the

Director 
directors and the cache memory.

 14. (NEW). A system interface comprising:

a plurality of directors

a data transfer section having a cache memory, such cache memory being coupled to the plurality of directors;

a messaging network, operative independently of the data transfer section, coupled to the plurality of directors;

wherein the directors control data transfer in response to messages passing between the directors through the messaging network with such data passing through the cache memory in the data transfer section; and

wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

15. (NEW). The system interface recited in claim 14 wherein each one of the directors includes:

a data pipe coupled between an input of such one of the directors and the cache memory; and

a controller for transferring the messages between the message network and such one of the directors.

16. (NEW) The system interface recited in claim 14 wherein the messaging network comprises a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of directors.

17. (NEW) The system interface recited in claim 16 wherein each one of the directors includes:

a data pipe coupled between an input of such one of the directors and the

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cache memory; and

a controller for transferring the messages between the message network and such one of the directors.

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18. (NEW) A data storage system for transferring data between a host computer/server and a bank of disk drives through a system interface, such system interface comprising:

a plurality of first directors coupled to host computer/server;
a plurality of second directors coupled to the bank of disk drives;
a data transfer section having a cache memory, such cache memory being coupled to the plurality of first and second directors;
a messaging network, operative independently of the data transfer section, coupled to the plurality of first directors and the plurality of second directors;
wherein the first and second directors control data transfer between the host computer and the bank of disk drives in response to messages passing between at least a pair of the plurality of first and second directors through the messaging network with such data passing through the cache memory in the data transfer section; and
wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

19. (NEW) The system interface recited in claim 18 wherein each one of the first and second directors includes:

a data pipe coupled between an input of such one of the first and second directors and the cache memory;
a controller for transferring the messages between the message network and such one of the first and second directors.

20. (NEW) The system interface recited in claim 18 wherein the messaging network

msc1  comprises a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of first and second directors.

B 21. (NEW) The system interface recited in claim 20 wherein each one of the directors includes:

- a data pipe coupled between an input of such one of the directors and the cache memory; and
- a controller for transferring the messages between the message network and such one of the directors.

22. (NEW) A system interface comprising:

- a plurality of directors;
- a data transfer section having a cache memory, such cache memory being coupled to the plurality of directors;
- a messaging network, operative independently of the data transfer section, coupled to the plurality of directors;
- wherein the directors control data transfer in response to messages passing between the directors through the messaging network with such data passing through the cache memory in the data transfer section; and
- wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

23. (NEW) The system interface recited in claim 22 wherein each one of the directors include:

- a data pipe coupled between an input of such one of the directors and the cache memory;
- a controller for transferring the messages between the message network and such one of the directors.

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24. (NEW) The system interface recited in claim 22 wherein the messaging network comprises a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of directors.

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25. (NEW) The system interface recited in claim 23 wherein each one of the directors includes:

a data pipe coupled between an input of such one of the directors and the cache memory; and

a controller for transferring the messages between the message network and such one of the directors.

26. (NEW) A system interface comprising:

a plurality of directors;

a data transfer section having a cache memory, such cache memory being coupled to the plurality of directors;

a messaging network comprising a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of directors, such message network being operative independently of the data transfer section;

wherein the directors control data transfer in response to messages passing between the directors through the messaging network with such data passing through the cache memory in the data transfer section; and

wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

27. (NEW) A system interface comprising:

a plurality of directors;

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a data transfer section having a cache memory, such cache memory being coupled to the plurality of directors;

a messaging network, operative independently of the data transfer section, coupled to the plurality of directors;

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wherein the directors control data transfer in response to messages passing between the directors through the messaging network with such messages by-passing the data transfer section and with such data transfer comprising passing data through the directors to the cache memory in the data transfer section; and

wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

28. (NEW) The system interface recited in claim 27 wherein the messaging network comprises a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of directors.

29. (NEW) A system interface comprising:

a plurality of directors;


a data transfer section having a cache memory, such cache memory being coupled to the plurality of directors;

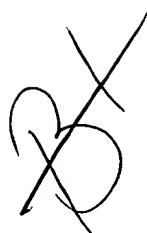
a messaging network coupled to the plurality of directors;

wherein the first and second directors control data transfer in response to messages passing between the directors through the messaging network with such messages by-passing the data transfer section and with such data transfer comprising passing data through the directors to the cache memory in the data transfer section; and

wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

30. (NEW) The system interface recited in claim 29 wherein the messaging network

pub 11  comprises a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of directors.

31  31. (NEW) A system interface comprising:

a plurality of directors;
a data transfer section having a cache memory, such cache memory being coupled to the plurality of directors;
a messaging network comprising a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of directors;
wherein the directors control data transfer in response to messages passing between the directors through the messaging network with such messages by-passing the data transfer section and with such data transfer comprising passing data through the directors to the cache memory in the data transfer section; and
wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

32. (NEW). A system interface comprising:

a plurality of directors
a data transfer section having a cache memory, such cache memory being coupled to the plurality of directors;
a messaging network, operative independently of the data transfer section, coupled to the plurality of directors;
wherein the directors control data transfer in response to messages passing between the directors through the messaging network with such data passing through the cache memory in the data transfer section; and
wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

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33. (NEW). The system interface recited in claim 32 wherein each one of the directors includes:

a data pipe coupled between an input of such one of the directors and the cache memory; and
a controller for transferring the messages between the message network and such one of the directors.


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34. (NEW) The system interface recited in claim 32 wherein the messaging network comprises a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of directors.

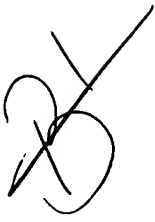
35. (NEW) The system interface recited in claim 32 wherein each one of the directors includes:

a data pipe coupled between an input of such one of the directors and the cache memory; and
a controller for transferring the messages between the message network and such one of the directors.

36. (NEW) A data storage system for transferring data between a host computer/server and a bank of disk drives through a system interface, such system interface comprising:

a plurality of first directors coupled to host computer/server;
a plurality of second directors coupled to the bank of disk drives;
a data transfer section having a cache memory, such cache memory being coupled to the plurality of first and second directors;
a messaging network, operative independently of the data transfer section, coupled to the plurality of first directors and the plurality of second directors;

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wherein the first and second directors control data transfer between the host computer and the bank of disk drives in response to messages passing between at least a pair of the plurality of first and second directors through the messaging network with such data passing through the cache memory in the data transfer section; and


wherein there are separate point-to-point data paths between each one of the directors and the cache memory.

37. (NEW) The system interface recited in claim 36 wherein each one of the first and second directors includes:

a data pipe coupled between an input of such one of the first and second directors and the cache memory;

a controller for transferring the messages between the message network and such one of the first and second directors.

38. (NEW) The system interface recited in claim 36 wherein the messaging network comprises a switch network having a plurality of ports, each one of the ports being coupled to a corresponding one of the plurality of first and second directors.

39. (NEW) The system interface recited in claim 38 wherein each one of the directors includes:

a data pipe coupled between an input of such one of the directors and the cache memory; and

a controller for transferring the messages between the message network and such one of the directors.